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- (71) Applicant (for all designated States except US): KONIN-KLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): MITCHUM, Sam [US/US]; P.O. Box 3001, Briarcliff Manor, NY 10510-8001 (US). EHRHARDT, Jack [US/US]; P.O. Box 3001, Briarcliff Manor, NY 10510-8001 (US). LESTER, Bill [US/US]; P.O. Box 3001, Briarcliff Manor, NY 10510-8001 (US).

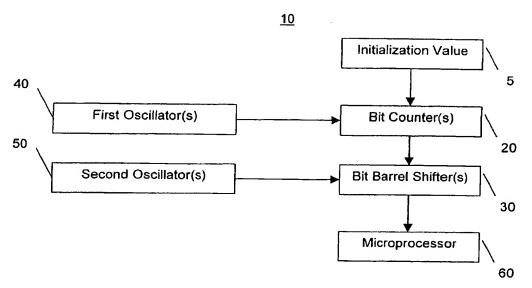
- (74) Common Representative: KONINKLIJKE PHILIPS ELECTRONICS N.V.; c/o WAXLER, Aaron, P.O. Box 3001, Briarcliff Manor, NY 10510-8001 (US).
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[Continued on next page]

### (54) Title: SYSTEM AND METHOD FOR TRUE RANDOM NUMBER GENERATION



(57) Abstract: There is provided a system and method for providing an entirely digital and/or digitally synthesizable true random number generator for incorporation on integrated circuits using any standard logic synthesis tool or comparable technique. The system and method has at least a microprocessor operating at a first frequency, at least one counter for generating bits, at least one shifter for scrambling bits, at least one first oscillator for cooperating with the at least one counter; and at least one second oscillator for cooperating with the at least one shifter. The system being configured to provide a frequency perturbation based on digital input signals initialized via the microprocessor.

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A. CLASSIFICATION OF SUBJECT M IPC 7 G06F7/58 According to International Patent Classification (IPC) or to both national classification and IPC Minimum documentation searched (classification system followed by classification symbols) IPC 7 G06F Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal C. DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages Category ° Relevant to claim No. X EP 1 239 363 A (TOKYO SHIBAURA ELECTRIC 1-21 CO) 11 September 2002 (2002-09-11) paragraph '0007!; figure 2 paragraphs '0019! - '0029!; figure 4 A US 5 065 256 A (OHSAKI KAYOKO ET AL) 1-21 12 November 1991 (1991-11-12) column 5, line 38 - column 6, line 48; figure 3 Α EP 1 241 564 A (NIPPON ELECTRIC CO) 1-21 18 September 2002 (2002-09-18) paragraph '0042! paragraph '0076! - paragraph '0082!; figure 16 Α EP 0 388 131 A (OKI ELECTRIC IND CO LTD) 8-12,16, 19 September 1990 (1990-09-19) column 2, line 33 - line 42; figure 1 Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: "T" later document published after the International filing date 'A' document defining the general state of the art which is not considered to be of particular relevance or priority date and not in conflict with the application but cited to understand the principle or theory underlying the \*E\* earlier document but published on or after the international invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docu-'O' document referring to an oral disclosure, use, exhibition or other means ments, such combination being obvious to a person skilled document published prior to the International filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 10 September 2004 22/09/2004 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo ni, Fax: (+31-70) 340-3016 Cohen, B

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